

Application Serial No. 10/583,880  
Reply to Office Action of July 28, 2009

PATENT  
Docket: CU-4890

### REMARKS

In the Office Action, dated July 28, 2009, the Examiner states that Claims 8-39 are pending and rejected. By the present Amendment, Applicant cancels the claims and adds new Claims 40-56.

#### Rejections under 35 U.S.C. §102 and 35 U.S.C. §103

Claims 9-14 and 20-29 are rejected under 35 U.S.C. §102(e) as being anticipated by Takizawa (US 2004/0245432). Claims 9-16 and 19-29 are rejected under 35 U.S.C. §102(a) as anticipated by Maeno et al. (JP 2004-318069). Claims 9-11, 13-16, 19-22, 24-27 and 29 are rejected under 35 U.S.C. §102(b) as anticipated by Oe et al. (JP 2000-109510). Claims 9-13, 15, 19-25 and 27-29 are rejected under 35 U.S.C. §102(b) as anticipated by Keys et al. (US 4,942,102). Claims 9-12, 17 and 19 are rejected under 35 U.S.C. §102(b) as anticipated by Smothers et al. (US 4,917,977) or Laganis et al. (EP 0 437 259). Claims 9-15 and 19 are rejected under 35 U.S.C. §102(b) as anticipated by Yamaguchi et al. (JP 06-175554). Claims 9-15, 18, 19 and 35-39 are rejected under 35 U.S.C. §102(b) as anticipated by Okubo et al. (US 5,965,324). Applicant respectfully disagrees with and traverses these rejections.

Also, Claims 9-13, 15, 19-25 and 27-29 are rejected under 35 U.S.C. §103(a) as obvious over Keys et al. in view of Monroe (US 5,096,790) and Baum (US 3,652,275). Claims 9-12, 17, 19, 30 and 32-34 are rejected under 35 U.S.C. §103(a) as obvious over Laganis et al. Claims 9-12, 14, 17, 19 and 30-34 are rejected under 35 U.S.C. §103(a) as obvious over Kawabata et al. (US 5,453,340) in view of Harada et al. (JP 01-287105). Claims 9-15, 18, 19 and 35-39 are rejected under 35 U.S.C. §103(a) as obvious over Okubo et al. in view of Ernst et al. (DE 100571141). Applicant respectfully disagrees with and traverses these rejections.

At the outset, Applicant indicates that Claims 8-39 are cancelled solely in the interest of advancing prosecution and without prejudice or disclaimer of the subject matter thereof. Accordingly, the rejections of these claims are moot. Moreover, Applicant has added new Claims 40-56 and Applicant respectfully asserts that these new claims should not be rejected as anticipated by, or obvious over, any of the cited prior art references.

Applicant indicates that the present application has a foreign priority date of December 22, 2003. However, Takizawa has a US filing date of May 20, 2004, and

Application Serial No. 10/583,880  
Reply to Office Action of July 28, 2009

PATENT  
Docket: CU-4890

Maeno et al. has a publication date of November 11, 2004. Accordingly, Applicant respectfully asserts that the foregoing references are not properly citable as prior art references. Applicant is currently preparing a certified translation of the priority document, which will be filed in a Supplemental Amendment in the very near future.

With respect to new Claim 40, Applicant respectfully asserts that Smothers that a squarylium dye S-5 was used in Example 13 (see Table 3). The structure of S-5 was mentioned in column 20 of Smothers. Compared with this, the compound (2) of Claim 40 may be a squarylium compound but the structure is clearly different from that of squarylium dye S-5 in Smothers. In addition, Smothers does not teach or suggest how much the maximum absorption wavelength of squarylium dye S-5 deviates from the recording wavelength applied to the same.

Laganis et al. teaches that squarylium dye 3 was used in Examples 5 and 12 (see Tables 1 and 2, respectively.) In Laganis et al., the structure of squarylium dye 3 (sensitizer 3) was mentioned on page 6, around line 25, and the chemical formula is mentioned on page 13, lines 43-45. Compared with this, the compound (2) of Claim 40 may be a squarylium compound but the structure is different from that of squarylium dye 3 in Laganis et al. In addition, Laganis et al. does not teach or suggest how much the maximum absorption wavelength of squarylium dye 3 deviates from the recording wavelength applied to the same.

Kawabata et al. teaches that DYE-4 was used in Example 24. The chemical formula was mentioned in column 15, lines 12-14 of Kawabata et al., which has a 1,3,5-thiadiazolidine ring. Compared with this, the compound (1) of Claim 40 has a benzothiazolidene ring, and the structure is different from that of DYE-4 in Kawabata et al. In addition, Kawabata et al. does not teach or suggest how much the maximum absorption wavelength of DYE-4 deviates from the recording wavelength applied to the same.

Harada et al. teaches to contain a cyanine dye in a photopolymerizable compound, and, as the cyanine dye, it mentions:

Chemical name: 2-[[3-ally-5-2[2-(5,6-dimethyl-3-propyl -2(3H)-benzothiazolylidene)ethylidene]-4-oxo-2thiazolidinylidene]methyl]-3-ethyl-4,5-diphenylthiazolium methylsulfate, on page 2, the right column, lines 17-20.

Compared with this, the compound (1) of Claim 40 is different in structure from the cyanine dye in Harada et al. In addition, Harada et al. does not teach or

Application Serial No. 10/583,880  
Reply to Office Action of July 28, 2009

PATENT  
Docket: CU-4890

suggest how much the maximum absorption wavelength of the squarylium dye used deviates from the recording wavelength applied to the same.

Since the foregoing references do not teach or suggest each and every feature of new Claim 40, Applicant respectfully asserts that none of them can be cited as anticipating this claim. Moreover, even if those skilled in the art refer to the above references, Applicant respectfully asserts that they would find no teaching, suggestion, or motivation to conceive that when the compounds (1) and (2) of Claim 40 are used in combination as the sensitizing dye in the refractive index modulation component, and hologram recording is conducted using a red recording wavelength (630 to 670 nm), the diffraction efficiency is increased and a bright hologram is thus obtained by controlling the maximum absorption wavelength deviates from the recording wavelength by 14 nm or more.

With respect to new Claim 46, Applicant indicates that Oe et al. teaches to use a cyclopentanone compound as a hologram recording material (see paragraph [0026]). Also, the compound used in Example 3 (Table 1 in paragraph [0037]) and Example 11 (Table 2 in paragraph [0040]) of Oe et al., compound D-3, is the compound (3) of the present invention, which is a cyclopentanone compound. In Oe et al., the recording wavelength in Example 3 is 514.5 nm (paragraph [0045]), and the cyclopentanone compound (3) of the present invention has a maximum absorption wavelength of 479.5 nm. Therefore, the deviation (difference) between the two wavelengths is more than 14 nm.

Keys et al. teaches that cyclopentanone compounds DEAW and JAW were used in Examples (see column 17, lines 55-56). The meaning of DEAW and JAW were each described in the list of column 19. Especially, "DEAW" corresponds to the compound (3) of the present invention. The Office Action especially pointed out Example 55 in which JAW was used.

Baum et al. was mentioned in column 8, line 68 of Keys et al. In Baum et al., a cyclopentanone compound was mentioned as an example.

In Monroe, the maximum absorption wavelength and extinction coefficient of cyclopentanone compound DEAW and JAW are each mentioned.

These cited references, however, do not teach or suggest the use of a photopolymerizable compound, which is a refractive index modulation component, in combination with the second refractive index modulation component having a

Application Serial No. 10/583,880  
Reply to Office Action of July 28, 2009

PATENT  
Docket: CU-4890

different refractive index from that of the first compound.

Since the foregoing references do not teach or suggest each and every feature of new Claim 46, Applicant respectfully asserts that none of them can be cited as anticipating this claim. Moreover, even if those skilled in the art refer to the above references, Applicant respectfully asserts that they would find no teaching, suggestion, or motivation that when the cyclopentanone compounds (3) and (4) of Claim 46 are used in combination as the sensitizing dye in the refractive index modulation component, and hologram recording is conducted using a green recording wavelength (514 to 560 nm), the diffraction efficiency is increased and a bright hologram is thus obtained by controlling the maximum absorption wavelength of the sensitizing dye and the recording wavelength so that the maximum absorption wavelength deviates from the recording wavelength by 14 nm or more, and by using two kinds of refractive index modulation components having a different refractive index in combination.

With respect to new Claim 51, Applicant indicates that Okubo et al. teaches that dye D-22 was used in Example 21. The structure of dye D-22 is mentioned in column 9, around line 25. Other dyes are mentioned in column 4 of Okubo et al. Compared with this, the compounds (5) and (6) of Claim 51 have a different structure from that of dye D-22 or the other suggested dyes. In addition, Okubo et al. does not teach or suggest how much the maximum absorption wavelength of dye D-22 deviates from the recording wavelength applied to the same.

In Ernst et al., formula A is mentioned on page 3 but Applicant respectfully asserts that the compound (5) of Claim 51 is not clearly mentioned. In addition, Ernst et al. does not teach or suggest how much the maximum absorption wavelength of formula A deviates from the recording wavelength applied to the same.

Since the foregoing references do not teach or suggest each and every feature of new Claim 51, Applicant respectfully asserts that none of them can be cited as anticipating this claim. Moreover, Applicant respectfully asserts that even if those skilled in the art refer to the above references, they would not find a teaching, suggestion, or motivation to conceive that when the compounds (5) and (6) of Claim 51 are used in combination as the sensitizing dye in the refractive index modulation component, and hologram recording is conducted using a blue recording wavelength

DEC 28 2009

00013/0014

12/28/2009 13:57 FAX 312 427 6663

LADAS & PARRY LLP

Application Serial No. 10/583,880  
Reply to Office Action of July 28, 2009

PATENT  
Docket: CU-4890

(420 to 488nm), the diffraction efficiency is increased and a bright hologram is thus obtained by controlling the maximum absorption wavelength of the sensitizing dye and the recording wavelength so that the maximum absorption wavelength deviates from the recording wavelength by 14 nm or more.

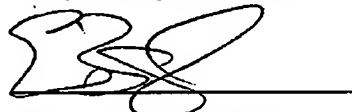
Accordingly, Applicant respectfully asserts that the currently pending claims should not be rejected against any of the cited prior art references.

In light of the foregoing response, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

December 28, 2009

Date

Respectfully submitted,



Attorney for Applicant  
Eric D. Babych  
c/o Ladas & Parry LLP  
224 South Michigan Avenue  
Chicago, Illinois 60604  
(312) 427-1300  
Reg. No. 57,542